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OF

DISLOCATED HEAD OF RADIUS, SUCCESSFULLY REDUCED TWO YEARS AND ONE MONTH AFTER THE OCCURRENCE OF THE DISLOCATION.

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MARY H., about 9 years of age, while playing with the nursery maid on the first week of May 1845, fell from a table against the fender, the elbow of the right arm coming in contact with its edge. Acute pain, with immobility of the joint, speedily followed by great swelling, ensued, for which the family surgeon was called, but considering it as a simple contusion, treated the matter lightly, and merely applied camomile fomentations. About a month after the accident, when one of our more celebrated surgeons was calling at the house, he was shown the child's arm, and after examining the elbow-joint, pronounced it to be "a case of fracture of the neck of the radius—a very rare case—for which, however, at that distance from the date of the accident, nothing could be done."

When called to attend this child for an attack of chicken-pox, on the 4th May 1847, the disfigured form of the elbow-joint attracted my attention. I then learned that, from the date of the accident, the child had never regained the free use of the arm, that it was a constant source of annoyance to her, as she could not allow it to be handled freely when at play with her companions, nor could she lift any weight, or carry even her bag of school-books in that hand; in fact, she carried the arm as if it were paralytic. The moment the arm was examined, a dislocation forwards of the head of the radius was recognized—a dislocation by

no means common, yet one whose diagnosis is so distinct that it is surprising how it could ever have been overlooked. The hand was pronated, and it gave uneasiness to supinate it. The arm could not be extended quite straight, but when extended, the rounded head of the radius, drawn up by the bicep tendon, was seen to rise and form a distinct prominence in front of the elbow-joint, and was both seen and felt to rotate, as the hand was alternately pronated and supinated. When the arm was bent it was suddenly arrested by the head of the radius coming in contact with the fore part of the humerus. From practice, and probably also from the bones having somewhat conformed to their abnormal situation, the hand, when the arm was fully bent, could be made to touch the chin with the tips of the fingers. The head of the radius was felt to be wanting in its usual situation—a hollow space filled with a soft, but elastic, apparently fibrous deposit, existing at the outer and back part of the elbow-joint, where the head of the radius ought to have been felt articulated with the os humeri. As the radius could be traced continuously to the rounded head which projected in front of the elbow-joint, it was quite apparent that the head of the bone had been dislocated, and not fractured. The round head seemed almost as large and as little altered in figure as if it had been newly displaced. It was otherwise, however, with the external condyle of the humerus. It was greatly diminished in size, and its sharp edges much rounded off—facts very notable when compared with the corresponding condyle of the sound arm.

Two questions then presented themselves for consideration. *First*, Was it prudent to meddle at all with such an old dislocation? *Secondly*, If so, and the reduction should be effected, was there any chance of the restored joint proving as serviceable as even the preternatural one now formed, seeing that the articular surface of the humerus was so altered in shape?

On consulting the writings of Flaubert, Marx, Sir Astley Cooper, and Dupuytren, who more especially treat of the reduction of old dislocations, it was ascertained that these able surgeons coincided in opinion, that ball and socket joints could be reduced at a much later period of time after the occurrence of the dislocation than hinge-joints; and yet, of even these joints they limit the period, during which it is either safe or possible to reduce them, to a few months. In the case of hinge-joints (as the elbow) they unanimously agree, that within a very short period after dislocation, they become irreducible, without using such an amount of violence as to tear across muscles, nerves, and blood-vessels, and thus endanger life by rendering amputation of the limb necessary.

With regard to the particular dislocation now under review,

Sir Astley Cooper relates, that during his extensive practice he had only seen six cases. Of these, four were unable to be reduced, though the most varied and violent efforts were used. The other two were reduced. In my own practice, only two cases of dislocation of the head of the radius forwards had previously been met with. In the first case, the woman fell over a window three stories in height, and, besides other injuries, received a compound fracture of the condyles of the humerus, with displacement forwards of the head of the radius. In consequence of the injury to the soft parts, and the fracture of the condyles, the head of the radius could not be retained *in situ*, and when the cure was effected, the *callus* had formed a new socket for the head of the radius, and it was not considered prudent to interfere with it. From the head of the radius moving in a bony socket, the arm soon afterwards became quite strong, though it never could be bent so as to allow the fingers to touch the face; and the woman, by occupation a washerwoman, was able to prosecute her usual employment. In the other case, the accident occurred from falling on the ice, alighting on the hand; and the reduction was easily effected by pulling by the hand, and bending the fore arm on the arm, when the head of the radius was brought to the edge of the articular surface of the humerus, at the same time pressing down the head of the radius with the thumbs.

In the present case, the child was of a soft lax fibre, and as the arm was comparatively useless and weak, it was wasted or much softer, thinner, and less muscular than the sound arm. Provided, therefore, that the extension was applied gradually, and care was taken not to employ such violence as would cause the rupture of muscles, nerves, or blood-vessels, there appeared to be nothing to contraindicate an attempt at reduction. The consideration of the second question seemed still further to indicate that an attempt ought to be made to reduce the dislocation. The present state of the arm was a constant source of annoyance. It was disfigured in shape, was weak, and comparatively useless. As the head of the radius was uninjured and normal in form, it was not considered any objection that the external condyle of the humerus was somewhat altered in form, seeing that it was probable that when the bones were put *in situ*, that part would recover its former size and structure. By effecting the reduction, therefore, there was every chance of the limb being rendered more useful than it had been since the period of the dislocation.

As from the cases related by Flaubert, Marx, and Dupuytren, it appeared that the chief danger in reducing old dislocations arose from the risk of rupturing the muscles, blood-vessels, or nerves, by employing violent efforts at reduction, it was deter-

mined in this case to extend the arm firmly, but gently, day by day, till the new adhesions of the head of the radius were so much lengthened, or the head so loosened from its new site, that, by the employment of not much additional force, the bone would at last be put into its proper place. The extension was effected by seizing the hand of the patient with the right hand, bending the elbow-joint so that the fore-arm formed a right angle with the arm, and applying the counter-extension by passing the left hand close above the elbow-joint, and thus fixing the humerus. The extension was then continued till slight uneasiness was complained of. This was repeated daily from the 12th May till the 2nd of June 1847. By this time the head of the radius had become quite loosened, and could be pulled to the edge of the articular head of the humerus. On the 2d of June, therefore, I made the extension and counter-extension myself, and when the head of the radius arrived at the edge of the articular surface of the humerus, allowed the ball of the thumb of the left hand to press against it; when bending the fore-arm on the arm, the bone quietly slipped into its place. The head of the radius was found to have a strong tendency to slip out of its place and return to its former situation in front of the elbow-joint, partly on account of the altered form of the condyle of the humerus, partly from the cavity of the joint being filled with the forementioned elastic fibrous deposit. The arm was therefore kept much bent, and the hand tied up across the chest, so that the tips of the fingers almost touched the opposite clavicle.

Slight tumefaction, increased heat, and redness, with uneasiness rather than distinct pain, followed. These were speedily relieved by an evaporating lotion, but no other treatment was required, and the child was allowed to take exercise as usual. After a few days, a bandage was applied round the joint, but gave such uneasiness that it was obliged to be removed. No application was therefore made to the joint itself. After the lapse of about a fortnight, slight motion was daily given to the elbow-joint, without, however, lowering the hand or extending the arm. In about three and a-half weeks after the reduction, the fore-arm was lowered so as to form nearly a right angle with the arm, greater motion was daily allowed to the elbow-joint, and frictions were also employed to promote the absorption of the fibrinous deposit, which, from filling the joint, still prevented the close coaptation of the bones. By the 10th of July the motions of the elbow-joint were found on trial to be nearly as extensive as those of the sound arm. The fore-arm could be bent on the arm so as to allow of the hand being put to any part of the head; but when the arm was extended, the head of the radius threatened to rise and resume its abnormal situation. The arm was therefore so tied that it could not be extended further than a right angle.

By the 1st August, or two months after reduction, the head of the radius was found to have acquired such a degree of firmness in its proper site, that all bandages were removed, and the arm was allowed to be free. From this day the hand and arm improved in strength, so that, by the middle of September, both the child and her parents acknowledged she had much more use of the hand than she had had from the day of the accident, two years and four months past.

When examined in October, the cure was found to be nearly perfect. The arm and hand were nearly as strong as the left or sound arm. She could carry freely in that hand her bag of books to school, which she could not previously do, and could lift weights and use every freedom with it.

The elbow-joint itself still presented some peculiarities. The head of the radius, in consequence of the elastic fibrous deposit which filled the joint, was still not in close contact with the articular surface of the humerus, some of this deposit seeming to intervene; and it was also thrown, from the same cause, further forward than natural on the fore part of the elbow-joint. The external condyle of the humerus, though perceptibly larger than before the reduction, had not yet acquired its normal form, and the arm could not be extended quite straight in consequence of the contracted state of the biceps muscle of the arm—a contraction produced by the head of the radius lying for upwards of two years in front of the elbow-joint. All the motions of the joint, however, were as perfect as in the sound arm, and complete pronation and supination of the hand were effected with ease. The elbow-joint could be bent so that the hand could touch the shoulder or any part of the head or face. There is every prospect, therefore, that in no long time the elbow-joint will return to its normal state; that the head of the radius will sink to its proper position in proportion as the fibrinous effusion becomes absorbed; and that the biceps muscle again becoming lengthened, will permit the arm to be fully straightened.

This case appears to be important on many accounts. *First*, It shows, that, by judicious management, a dislocation may be reduced at least two years and one month after its occurrence, and this, too, in a child, in whom the bones change more rapidly than in an adult; and it is quite possible that this same dislocation might have been reduced with safety at a much more distant date. *Secondly*, It shows that the mere circumstance of the bones being somewhat altered in form, or the site of the old joint being more or less completely filled up, should not be considered as a bar to the attempt at reduction; for, in this case, the external condyle was much reduced in size, and altered in shape, and the site of the old joint was quite filled up; so that, even when restored to

its place, the head of the radius could only be kept *in situ* by keeping the arm much bent. *Thirdly*, It proves the great advantage of making the extension slowly and gradually, and never continuing it so long as to give rise to reaction, but each day merely so to act on the new-formed artificial joint, as to loosen its attachments, and lengthen the muscles, nerves, blood-vessels, and ligaments; so that, when at length the final pull was given, none of these were torn across, and so no risk was incurred of losing the joint, limb, or life, by the incitement of dangerous inflammatory action.

If these principles were applied to the reduction of old dislocations, we should not hear of so many failures, still less of the occurrence of those dangerous lacerations of the soft parts, which have led in some cases to the loss of the limb, in others, to that of life itself. In attempting the reduction of old dislocations, nothing should be attempted by sudden violence, or by one or two violent efforts at reduction. The only justifiable mode of reducing old dislocations appears to be to act on them slowly and gradually, and be satisfied if we succeed in restoring the joint to its natural state at the end even of several weeks.

21, *Heriot Row*,
9th November 1847.

